PRIOR RESEARCH

Since 1995, researchers have used a standardized set of 18 questions to measure food security among households, and these questions have been incorporated in several national surveys. The questions focus on conditions and behaviors that characterize households experiencing difficulty in meeting food-related needs due to financial constraints. Depending upon the number of affirmative responses, households are classified into one of three categories—food secure, food insecure without hunger, or food insecure with hunger. Households must respond affirmatively to three or more questions to be classified as food insecure.[1] Hunger is thus conceptualized as a severe form of food insecurity.

Stimulated by the developments in food security measurement, a growing body of work has begun to address the prevalence, causes, and consequences of food insecurity. Recent estimates indicate that 11.2 percent of American households are food insecure, including 3.5 percent that experience hunger. Among households with children, the corresponding rates are higher: 16.7 percent food insecure, including 3.8 percent that experience hunger (Nord, Andrews, and Carlson 2004).

Children in food-insecure households experience a variety of disruptions in their eating habits. Eighty-one percent of food-insecure households reported relying on only a few kinds of low-cost foods to feed their children; 52 percent reported that at times they couldn't afford to feed their children balanced meals; and one-quarter reported that at times they couldn't afford to give the children enough to eat (Nord, 2003b). Further, researchers have documented a variety of negative consequences of food insecurity, ranging from deficits in nutritional consumption (see, e.g., Kendall, Olson, and Frongillo

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[1]The food security scale includes questions about behaviors and conditions that range from less severe to very severe. At the less severe end of the spectrum, questions include, "We worried about whether our food would run out before we got money to buy more. Was that often, sometimes, or never true for you in the past 12 months?" and "The food we bought just didn't last, and we didn't have money to get more. Was that often, sometimes, or never true for you in the past 12 months?" At the mid-range of the spectrum, sample questions include "Did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?" and "In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?" At the most severe end of the spectrum, questions include "In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?" and "In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?"

1996) to poor outcomes on broader measures of well-being. For instance, Dunifon and Kowaleski-Jones (2003) find that children living in food-insecure households experience greater health problems and increased behavior problems than do children in food-secure households, while Winicki and Jemison (2003) find that food-insecure children have lower math scores.

Research on the determinants of food insecurity has largely focused on the role of sociodemographic characteristics of households and individuals. Not surprisingly, poverty and food insecurity are closely linked: the prevalence of food insecurity declines from 35.1 percent among poor households to 4.9 percent among households with income above 1.85 times the federal poverty line (Nord, Andrews, and Carlson, 2004). Nonetheless, poverty and food insecurity are distinct phenomena. More than half of poor households are not considered food insecure, and equally important, more than half of food-insecure households are not poor (Nord, Andrews, and Carlson, 2004). Food insecurity does not reach negligible levels until household income exceeds five times the poverty threshold (Nord and Brent, 2002). The factors that moderate the relationship between income and food security are not well understood.

In addition to poverty status, Nord and colleagues (2004) find that single parenthood, race (specifically, African ancestry), and Hispanic ethnicity are associated with higher rates of household food insecurity. Other research highlights the relationship between food insecurity and low education (Daponte and Stephens, 2004; Rose, Gundersen, and Oliveira, 1998), lack of home ownership (Rose, Gundersen, and Oliveira, 1998), lack of savings (Olson et al., 1997), recent changes in income (Gundersen and Gruber, 2001), unemployment (Daponte and Stephens, 2004), poor health status, and social isolation (Tarasuk, 2001).

Although research initially focused largely on individual and household characteristics, there have also been efforts to explore the role of contextual factors in contributing to food security outcomes. Such efforts have variously examined the role of food assistance programs, welfare policies, and

economic and social contexts, generally focusing on one or another of these factors rather than using a more integrative approach that simultaneously considers multiple factors.

Efforts to identify the impact of food assistance programs on food security status are complicated by self-selection of participants into programs on the basis of unobservable characteristics. For instance, Gundersen and Oliveira (2001) find that Food Stamp participants have higher levels of food insufficiency (a less detailed measure of households' difficulty meeting food needs) than nonparticipants, a result they attribute to selection. To address this, they use a simultaneous equations model in which exogenous variables are used to predict both Food Stamp participation and food insufficiency, and they find no difference in the food security levels of Food Stamp participants and nonparticipants. To date, there has been little research that examines the impact of participation in other nutrition assistance programs, such as WIC, the School Breakfast program, or the National School Lunch program, on food insecurity. A recent exception is Nord (2003c), who finds that seasonal differences in food insecurity (higher in the summer than the spring) are smaller in states with more widespread participation in the Summer Food Service program, providing suggestive evidence that the program helps ameliorate food insecurity among households with school-age children. In contrast to the limited research linking food assistance programs to reductions in food insecurity, there is a variety of evidence that participation in such programs is linked to improved nutritional outcomes (see, e.g., Devaney and Moffitt, 1991; Basiotis, Kramer-LeBlanc, and Kennedy, 1998; Bhattacharya and Currie, 2001; Oliveira and Gundersen, 2000).

Other research has examined potential linkages between welfare policies and food security. Cook et al. (2002) find that food insecurity is higher among children in families whose welfare benefits are eliminated or reduced, and that participation in the Food Stamp program does not mitigate this association. Borjas (2001) uses state variation in the availability of welfare benefits to immigrants to predict immigrants' food security status, finding evidence that a reduction in the availability of a variety of welfare benefits leads to an increase in food insecurity. On the other hand, Winship and Jencks (2002) find evidence that welfare reform—broadly defined to encompass the range of policy changes in the late

1990s, including expansions of the Earned Income Tax Credit (EITC)—did not increase food insecurity among single mothers, and in fact may have improved their food security. Their research does not attempt to isolate the role of specific policies.

Finally, there is some evidence from recent studies suggesting that economic and social contexts at the state and sub-state levels may be linked to food insecurity. Tapogna and colleagues (2004) find that state differences in residential mobility, peak unemployment, and housing costs are strong predictors of state hunger rates. Looking at sub-state factors, Bernell, Weber, and Edwards (2004) find evidence that food insecurity in Oregon is more common in the context of high unemployment and low wages, as well as among households experiencing greater residential mobility. Finally, Yang and Dunifon (2004), examining data from rural communities in New York, find that access to food outlets is not predictive of household food security.

Despite the rapidly increasing literature on food insecurity and its correlates, there has been little effort to develop an integrated model of food insecurity that incorporates both household and contextual characteristics. In particular, researchers have thus far not articulated a clear conceptual model to describe the potential interplay between individual and contextual factors as predictors of household food security. Furthermore, there have been only limited efforts to understand the extent to which household and contextual characteristics are able to explain cross-state differences in the prevalence of food insecurity. This report seeks to fill these gaps.